

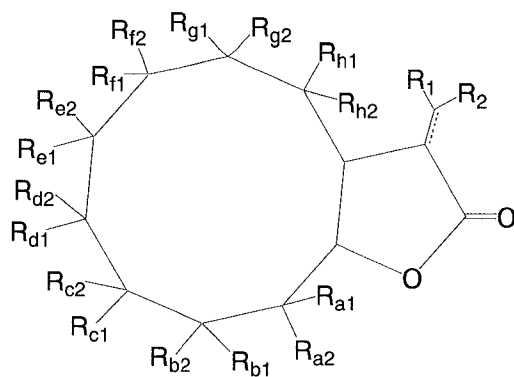
AMENDMENTS TO THE CLAIMS:

This listing of claims replaces all prior versions and listings of claims in the application.

Listing of claims:

1. (Original) A method for treating hepatitis C virus infection, comprising administering to a subject in need thereof an effective amount of a sesquiterpene lactone having a  $\gamma$ -lactone fused with a 10-membered ring, an 8-membered ring that is further fused with a 4-membered ring, a 7-membered ring that is further fused with a 5-membered ring, or a 6-membered ring that is further fused with a 6-membered ring.
2. (Original) The method of claim 1, wherein the  $\gamma$ -lactone is substituted with a methylene group.
3. (Original) The method of claim 1, wherein the  $\gamma$ -lactone is substituted with an alkyl group.
4. (Original) The method of claim 1, wherein the sesquiterpene lactone is concurrently administered in combination with a second therapeutic agent, in which the second therapeutic agent is IFN $\alpha$ , Intron A, PEG-INTRON, Roferon A, Pegasys, Infergen A, Wellferon, Omniferon, Interferon Omega, Albuferon- $\alpha$ , Rebif, Rebetrone, Symmetrel, an NS2-NS3 autoprotease inhibitor, an NS3 protease inhibitor, an NS3 helicase, an NS4 co-factor inhibitor, an NS5B polymerase inhibitor, an IRES Inhibitor, an inosine monophosphate dehydrogenase inhibitor, an E2 inhibitor, an antifibrotic, a caspase inhibitor, a  $\beta$ -tubulin inhibitor, an anti-HCV IgG, an immunosuppressant, or an immune modulator.

5. (Original) A method for treating hepatitis C virus infection, comprising administering to a subject in need thereof an effective amount of a sesquiterpene lactone of the formula:



wherein

each of  $R_1$  and  $R_2$ , independently, is H, alkyl, cycloalkyl, heterocycloalkyl, aryl, heteroaryl, aralkyl, an amino acid moiety, a polypeptide moiety, F, Cl, Br, I, OR, SR,  $NRR'$ ,  $C(O)R$ ,  $COOR$ , or  $O(C)OR$ ;

--- is a single bond or a double bond;

each of  $R_{a1}$  and  $R_{a2}$ , independently, is H, alkyl, cycloalkyl, heterocycloalkyl, F, Cl, Br, I, OR, SR,  $C(O)R$ ,  $COOR$ , or  $O(C)OR$ ; or  $R_{a1}$  and  $R_{a2}$ , taken together, is a methylene group, a carbonyl group, or an epoxy group; or one of  $R_{a1}$  and  $R_{a2}$ , together with one of  $R_{b1}$  and  $R_{b2}$ , is a double bond,  $-CH_2-$ , or  $-O-$ ; or one of  $R_{a1}$  and  $R_{a2}$ , together with one of  $R_{d1}$  and  $R_{d2}$ , is a single bond or  $-O-$ ; or one of  $R_{a1}$  and  $R_{a2}$ , together with one of  $R_{e1}$  and  $R_{e2}$ , is a single bond,  $-O-CR_2-O-$ , or  $-O-$ ; or one of  $R_{a1}$  and  $R_{a2}$ , together with one of  $R_{f1}$  and  $R_{f2}$ , is a single bond or  $-O-$ ;

each of  $R_{b1}$  and  $R_{b2}$ , independently, is H, alkyl, cycloalkyl, heterocycloalkyl, F, Cl, Br, I, OR, SR,  $C(O)R$ ,  $COOR$ , or  $O(C)OR$ ; or  $R_{b1}$  and  $R_{b2}$ , taken together, is a methylene group, a carbonyl group, or an epoxy group; or one of  $R_{b1}$  and  $R_{b2}$ , together with one of  $R_{c1}$  and  $R_{c2}$ , is a double bond,  $-CH_2-$ , or  $-O-$ ; or one of  $R_{b1}$  and  $R_{b2}$ , together with one of  $R_{e1}$  and  $R_{e2}$ , is a single bond,  $-CRR'-CH_2-$ , or  $-O-$ ; or one of  $R_{b1}$  and  $R_{b2}$ , together with one of  $R_{f1}$  and  $R_{f2}$ , is a single bond or  $-O-$ ; or one of  $R_{b1}$  and  $R_{b2}$ , together with one of  $R_{g1}$  and  $R_{g2}$ , is a single bond or  $-O-$ ;

each of  $R_{c1}$  and  $R_{c2}$ , independently, is H, alkyl, cycloalkyl, heterocycloalkyl, F, Cl, Br, I, OR, SR, C(O)R, COOR, or O(C)OR; or  $R_{c1}$  and  $R_{c2}$ , taken together, is a methylene group, a carbonyl group, or an epoxy group; or one of  $R_{c1}$  and  $R_{c2}$ , together with one of  $R_{d1}$  and  $R_{d2}$ , is a double bond,  $-CH_2-$ , or  $-O-$ ; or one of  $R_{c1}$  and  $R_{c2}$ , together with one of  $R_{f1}$  and  $R_{f2}$ , is a single bond or  $-O-$ ; or one of  $R_{c1}$  and  $R_{c2}$ , together with one of  $R_{g1}$  and  $R_{g2}$ , is a single bond or  $-O-$ ; or one of  $R_{c1}$  and  $R_{c2}$ , together with one of  $R_{h1}$  and  $R_{h2}$ , is a single bond or  $-O-$ ;

each of  $R_{d1}$  and  $R_{d2}$ , independently, is H, alkyl, cycloalkyl, heterocycloalkyl, F, Cl, Br, I, OR, SR, C(O)R, COOR, or O(C)OR; or  $R_{d1}$  and  $R_{d2}$ , taken together, is a methylene group, a carbonyl group, or an epoxy group; or one of  $R_{d1}$  and  $R_{d2}$ , together with one of  $R_{e1}$  and  $R_{e2}$ , is a double bond,  $-CH_2-$ , or  $-O-$ ; or one of  $R_{d1}$  and  $R_{d2}$ , together with one of  $R_{f1}$  and  $R_{f2}$ , is  $-COO-$ ; or one of  $R_{d1}$  and  $R_{d2}$ , together with one of  $R_{g1}$  and  $R_{g2}$ , is a single bond,  $-CRR'-CH_2-$ , or  $-O-$ ; or one of  $R_{d1}$  and  $R_{d2}$ , together with one of  $R_{h1}$  and  $R_{h2}$ , is a single bond or  $-O-$ ;

each of  $R_{e1}$  and  $R_{e2}$ , independently, is H, alkyl, cycloalkyl, heterocycloalkyl, F, Cl, Br, I, OR, SR, C(O)R, COOR, or O(C)OR; or  $R_{e1}$  and  $R_{e2}$ , taken together, is a methylene group, a carbonyl group, or an epoxy group; or one of  $R_{e1}$  and  $R_{e2}$ , together with one of  $R_{f1}$  and  $R_{f2}$ , is a double bond,  $-CH_2-$ , or  $-O-$ ; or one of  $R_{e1}$  and  $R_{e2}$ , together with one of  $R_{h1}$  and  $R_{h2}$ , is a single bond or  $-O-$ ;

each of  $R_{f1}$  and  $R_{f2}$ , independently, is H, alkyl, cycloalkyl, heterocycloalkyl, F, Cl, Br, I, OR, SR, C(O)R, COOR, or O(C)OR; or  $R_{f1}$  and  $R_{f2}$ , taken together, is a methylene group, a carbonyl group, or an epoxy group; or one of  $R_{f1}$  and  $R_{f2}$ , together with one of  $R_{g1}$  and  $R_{g2}$ , is a double bond,  $-CH_2-$ , or  $-O-$ ;

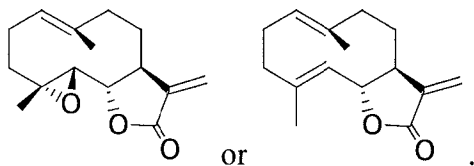
each of  $R_{g1}$  and  $R_{g2}$ , independently, is H, alkyl, cycloalkyl, heterocycloalkyl, F, Cl, Br, I, OR, SR, C(O)R, COOR, or O(C)OR; or  $R_{g1}$  and  $R_{g2}$ , taken together, is a methylene group, a carbonyl group, or an epoxy group; or one of  $R_{g1}$  and  $R_{g2}$ , together with one of  $R_{h1}$  and  $R_{h2}$ , is a double bond,  $-CH_2-$ , or  $-O-$ ; and

each of  $R_{h1}$  and  $R_{h2}$ , independently, is H, alkyl, cycloalkyl, heterocycloalkyl, F, Cl, Br, I, OR, SR, C(O)R, COOR, or O(C)OR; or  $R_{h1}$  and  $R_{h2}$ , taken together, is a methylene group, a carbonyl group, or an epoxy group;  
in which each of R and R', independently, is H, hydroxy, aryl, alkyl, cycloalkyl, heterocycloalkyl; or R and R', taken together, is a cycloalkyl or heterocycloalkyl.

6. (Original) The method of claim 5, wherein each of  $R_1$  and  $R_2$  is H and --- is a double bond.

7. (Original) The method of claim 6, wherein each of  $R_{a1}$  and  $R_{a2}$ , independently, is H; each of  $R_{b1}$  and  $R_{b2}$ , independently, is H or alkyl; or one of  $R_{a1}$  and  $R_{a2}$ , together with one of  $R_{b1}$  and  $R_{b2}$ , is a double bond or -O-; each of  $R_{c1}$  and  $R_{c2}$ , independently, is H, OR, or O(C)OR; or one of  $R_{b1}$  and  $R_{b2}$ , together with one of  $R_{c1}$  and  $R_{c2}$ , is a double bond or -O-; each of  $R_{d1}$  and  $R_{d2}$ , independently, is H or OR; or one of  $R_{c1}$  and  $R_{c2}$ , together with one of  $R_{d1}$  and  $R_{d2}$ , is -O-; each of  $R_{e1}$  and  $R_{e2}$ , independently, is H or OR; each of  $R_{f1}$  and  $R_{f2}$ , independently, is H, alkyl, OR, COOR, or O(C)OR; or  $R_{f1}$  and  $R_{f2}$ , taken together, is a methylene group; or one of  $R_{e1}$  and  $R_{e2}$ , together with one of  $R_{f1}$  and  $R_{f2}$ , is a double bond or -O-; each of  $R_{g1}$  and  $R_{g2}$ , independently, is H, OR, O(C)OR; or  $R_{g1}$  and  $R_{g2}$ , taken together, is a carbonyl group; or one of  $R_{f1}$  and  $R_{f2}$ , together with one of  $R_{g1}$  and  $R_{g2}$ , is a double bond; and each of  $R_{h1}$  and  $R_{h2}$ , independently, is H, OR, or O(C)OR.

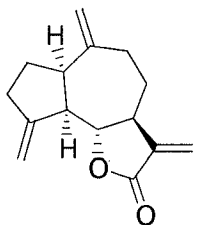
8. (Original) The method of claim 7, wherein the sesquiterpene lactone is



9. (Original) The method of claim 6, wherein one of  $R_{a1}$  and  $R_{a2}$ , together with one of  $R_{e1}$  and  $R_{e2}$ , is a single bond.

10. (Original) The method of claim 9, wherein the other of  $R_{a1}$  and  $R_{a2}$  is H or alkyl; each of  $R_{b1}$  and  $R_{b2}$ , independently, is alkyl; or  $R_{b1}$  and  $R_{b2}$ , taken together, is a methylene group or a carbonyl group; each of  $R_{c1}$  and  $R_{c2}$ , independently, is H or OR; or one of  $R_{b1}$  and  $R_{b2}$ , together with one of  $R_{c1}$  and  $R_{c2}$ , is a double bond; each of  $R_{d1}$  and  $R_{d2}$ , independently, is H; or  $R_{d1}$  and  $R_{d2}$ , taken together, is a carbonyl group; or one of  $R_{c1}$  and  $R_{c2}$ , together with one of  $R_{d1}$  and  $R_{d2}$ , is a double bond; the other of  $R_{e1}$  and  $R_{e2}$  is H; each of  $R_{f1}$  and  $R_{f2}$ , independently, is H or alkyl; or  $R_{f1}$  and  $R_{f2}$ , taken together, is a methylene group; each of  $R_{g1}$  and  $R_{g2}$ , independently, is H; and each of  $R_{h1}$  and  $R_{h2}$ , independently, is H or O(C)OR.

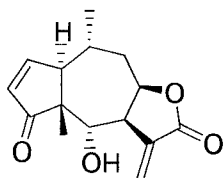
11. (Original) The method of claim 10, wherein the sesquiterpene lactone is



12. (Original) The method of claim 6, wherein one of  $R_{c1}$  and  $R_{c2}$ , together with one of  $R_{g1}$  and  $R_{g2}$ , is a single bond.

13. (Original) The method of claim 12, wherein each of  $R_{a1}$  and  $R_{a2}$ , independently, is H; each of  $R_{b1}$  and  $R_{b2}$ , independently, is H or alkyl; the other of  $R_{c1}$  and  $R_{c2}$  is H; or one of  $R_{b1}$  and  $R_{b2}$ , together with the other of  $R_{c1}$  and  $R_{c2}$ , is a double bond; each of  $R_{d1}$  and  $R_{d2}$ , independently, is H or OR; each of  $R_{e1}$  and  $R_{e2}$ , independently, is H or OR; or one of  $R_{d1}$  and  $R_{d2}$ , together with one of  $R_{e1}$  and  $R_{e2}$ , is a double bond; each of  $R_{f1}$  and  $R_{f2}$ , independently, is H, alkyl, or OR; or  $R_{f1}$  and  $R_{f2}$ , taken together, is a carbonyl group; the other of  $R_{g1}$  and  $R_{g2}$  is H or alkyl; and each of  $R_{h1}$  and  $R_{h2}$ , independently, is H, OR, or O(C)OR.

14. (Original) The method of claim 13, wherein the sesquiterpene lactone is



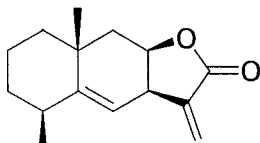
15. (Original) The method of claim 6, wherein one of  $R_{a1}$  and  $R_{a2}$ , together with one of  $R_{f1}$  and  $R_{f2}$ , is a single bond.

16. (Original) The method of claim 15, wherein the other of  $R_{a1}$  and  $R_{a2}$  is H; each of  $R_{b1}$  and  $R_{b2}$ , independently, is H or alkyl; or  $R_{b1}$  and  $R_{b2}$ , taken together, is a methylene group; each of  $R_{c1}$  and  $R_{c2}$ , independently, is H; or  $R_{c1}$  and  $R_{c2}$ , taken together, is a carbonyl group; or one of  $R_{b1}$  and  $R_{b2}$ , together with one of  $R_{c1}$  and  $R_{c2}$ , is a double bond; each of  $R_{d1}$  and  $R_{d2}$ , independently, is H; each of  $R_{e1}$  and  $R_{e2}$ , independently, is H or OR; or one of  $R_{d1}$  and  $R_{d2}$ , together with one of  $R_{e1}$  and  $R_{e2}$ , is a double bond; the other of  $R_{f1}$  and  $R_{f2}$  is alkyl; each of  $R_{g1}$  and  $R_{g2}$ , independently, is H; and each of  $R_{h1}$  and  $R_{h2}$ , independently, is H or O(C)OR.

17. (Original) The method of claim 6, wherein one of  $R_{b1}$  and  $R_{b2}$ , together with one of  $R_{g1}$  and  $R_{g2}$ , is a single bond.

18. (Original) The method of claim 17, wherein each of  $R_{a1}$  and  $R_{a2}$ , independently, is H; the other of  $R_{b1}$  and  $R_{b2}$  is alkyl; each of  $R_{c1}$  and  $R_{c2}$ , independently, is H or OR; each of  $R_{d1}$  and  $R_{d2}$ , independently, is H; or one of  $R_{c1}$  and  $R_{c2}$ , together with one of  $R_{d1}$  and  $R_{d2}$ , is a double bond; each of  $R_{e1}$  and  $R_{e2}$ , independently, is H; or  $R_{e1}$  and  $R_{e2}$ , taken together, is a carbonyl group; each of  $R_{f1}$  and  $R_{f2}$ , independently, is H or alkyl; or  $R_{f1}$  and  $R_{f2}$ , taken together, is a methylene group; the other of  $R_{g1}$  and  $R_{g2}$  is H or OR; and each of  $R_{h1}$  and  $R_{h2}$ , independently, is H; or the other of  $R_{g1}$  and  $R_{g2}$ , together with one of  $R_{h1}$  and  $R_{h2}$ , is a double bond.

19. (Original) The method of claim 18, wherein the sesquiterpene lactone is



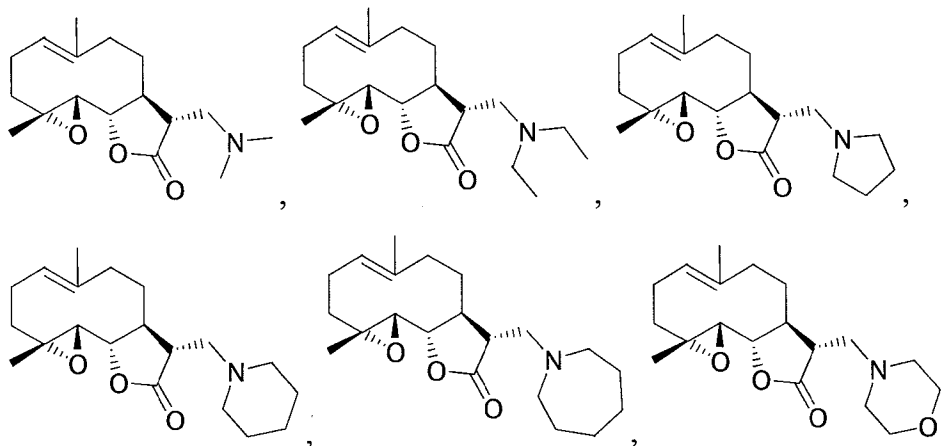
20. (Original) The method of claim 5, wherein --- is a single bond.

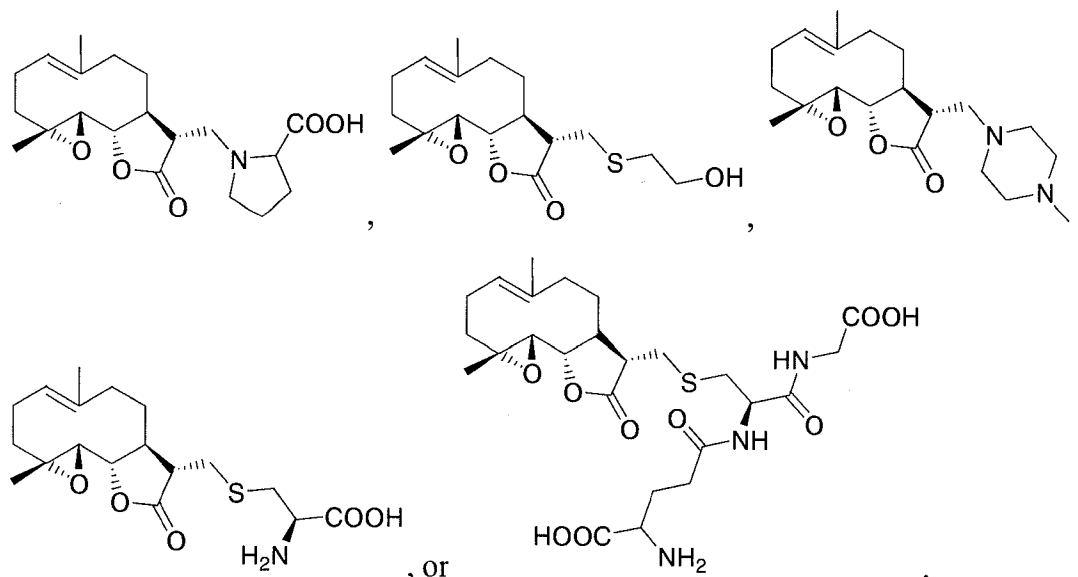
21. (Original) The method of claim 20, wherein each of  $R_1$  and  $R_2$ , independently, is H, heterocycloalkyl, SR, or NRR'.

22. (Original) The method of claim 21, wherein one of  $R_{a1}$  and  $R_{a2}$ , together with one of  $R_{b1}$  and  $R_{b2}$ , is -O-.

23. (Original) The method of claim 22, wherein one of  $R_{e1}$  and  $R_{e2}$ , together with one of  $R_{f1}$  and  $R_{f2}$ , is a double bond.

24. (Original) The method of claim 23, wherein the sesquiterpene lactone is





25. (Original) The method of claim 20, wherein one of  $R_{a1}$  and  $R_{a2}$ , together with one of  $R_{f1}$  and  $R_{f2}$ , is a single bond.

26. (Original) The method of claim 25, wherein the other of  $R_{a1}$  and  $R_{a2}$ , together with one of  $R_{b1}$  and  $R_{b2}$ , is a double bond or -O-; the other of  $R_{b1}$  and  $R_{b2}$  is H or alkyl;  $R_{c1}$  and  $R_{c2}$ , taken together, is a carbonyl group; one of  $R_{d1}$  and  $R_{d2}$  is H; the other of  $R_{d1}$  and  $R_{d2}$ , together with one of  $R_{e1}$  and  $R_{e2}$ , is a double bond or -O-; the other of  $R_{e1}$  and  $R_{e2}$  is H; the other of  $R_{f1}$  and  $R_{f2}$  is alkyl; each of  $R_{g1}$  and  $R_{g2}$ , independently, is H; and each of  $R_{h1}$  and  $R_{h2}$ , independently, is H.

27. (Original) The method of claim 5, wherein the sesquiterpene lactone is concurrently administered in combination with a second therapeutic agent, in which the second therapeutic agent is IFN $\alpha$ , Intron A, PEG-INTRON, Roferon A, Pegasys, Infergen A, Wellferon, Omniferon, Interferon Omega, Albuferon- $\alpha$ , Rebif, Rebetrone, Symmetrel, an NS2-NS3 autoprotease inhibitor, an NS3 protease inhibitor, an NS3 helicase, an NS4 co-factor inhibitor, an NS5B polymerase inhibitor, an IRES Inhibitor, an inosine monophosphate dehydrogenase inhibitor, an E2 inhibitor, an antifibrotic, a



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caspase inhibitor, a  $\beta$ -tubulin inhibitor, an anti-HCV IgG, an immunosuppressant, or an immune modulator.

28-32. (Cancelled)